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**PROGRESS REPORT - OPERABLE UNIT 3 - PRODUCTION AREA -
MARCH 1995**

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FACTSHEET


FERNALD

Environmental Management Project

Remedial Investigation/ Feasibility Study

PROGRESS REPORT

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Operable Unit 3 PRODUCTION AREA

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Introduction

The Remedial Investigation/Feasibility Study (RI/FS) is the blueprint for cleanup at the U.S. Department of Energy's Fernald Environmental Management Project. The nature and extent of contamination at the Fernald site and surrounding areas is being thoroughly investigated so that appropriate remedial actions can be formulated and implemented.

The Fernald site has been divided into five sections, known as Operable Units, for environmental investigation and cleanup. The Operable Units were defined based on their location or the potential for similar technologies to be used in the ultimate cleanup.

During the course of the RI/FS effort, certain conditions are occasionally identified which call for more immediate action. These actions are called "removal actions" and are initiated when there is a need to accelerate cleanup activities to address releases or potential releases of hazardous substances. Removal actions are coordinated with the U.S. EPA and the Ohio EPA.

Following is a progress report on Operable Unit 3 including its history, the current status of RI/FS activities, cleanup alternatives under consideration, and work that is being done to alleviate near-term concerns.

Background

Operable Unit 3, the former production area and production-associated facilities, is one of the largest and most complex of the Fernald site Operable Units, largely due to the wide variety of former processing and support facilities. When the mission at the Fernald site was production of high-purity uranium metal for U.S. defense programs and the processing of thorium to support other DOE programs, large quantities of radioactive materials and some hazardous chemicals were used in the various plants involved in the process. Operable Unit 3 focuses on

cleanup of contamination in the former production area resulting from the 37-year production mission at the Fernald site. The primary contaminant is uranium, and the main focal points of cleanup are buildings, equipment, and support facilities.

RI/FS Activities

Interim Remedial Action: A Record of Decision for Interim Remedial Action was approved by the U.S. EPA in July 1994, allowing for early remediation of existing structures within the former production area. The plan calls for decontaminating and dismantling buildings and support facilities several years in advance of the final Record of Decision for Operable Unit 3. The plan also provides for temporary on-site storage of the bulk rubble and debris from dismantlement activities as well as final off-site disposition of a limited portion of the debris. A determination on final disposition of rubble and debris from the interim remedial action will await the final Record of Decision for Operable Unit 3.

This interim remedial action with unconstrained funding could accelerate cleanup of the former production area by up to four years and result in a significant cost savings of approximately \$300 million.

The interim cleanup action was pursued as a result of concerns with the increased potential for releases from deteriorating structures in the production area. The action will result in early reduction of potential human health and environmental risks from the deteriorating structures.

Design plans and specifications for performing the interim remedial action are in progress. U.S. EPA has approved the Operable Unit 3 Remedial Design/Remedial Action (RD/RA) Work Plan for Interim Remedial Action, and the implementation plan for the dismantling of Plant 4.

Remedial Investigation: Field investigation activities for characterization of Operable Unit 3 structures are complete. Analytical results from

collected samples are being validated to ensure data quality. The results will be used to characterize contamination in the former production area, and to support the development of remedial action alternatives for disposal of demolition debris from Operable Unit 3. Results of the field program will be summarized in the Operable Unit 3 Remedial Investigation/Feasibility Study combined report.

Treatability Studies: Potentially applicable innovative technologies are being tested to support the decontamination, dismantling, and treatment requirements of remedial actions. Technology alternatives are being tested for applicability, effectiveness, cost, waste minimization, secondary waste generation, and other key evaluation criteria. Screening of many technologies has been completed, revealing possible opportunities to reduce costs and minimize short- and long-term risks.

The technologies being tested and the particular tests being conducted are detailed in the Treatability Study Work Plan for Operable Unit 3.

Feasibility Study: The scope of the Operable Unit 3 FS report is limited to evaluating options for treatment and final disposition of wastes generated by the decontamination and dismantlement of Operable Unit 3 buildings and support structures. The FS scope has been limited based on the approved Operable Unit 3 Record of Decision for Interim Remedial Action.

The FS Report was initiated earlier than planned due to the early availability of resources required to develop the report. The limited scope of the document, combined with the early completion of the Operable Unit 3 field characterization project, the reduced scope of the RI Risk Assessments, and the opportunity to combine RI and FS activities in a parallel mode, will result in early completion of the effort. EPA has approved this accelerated and combined approach. The revised EPA submittal date is September 11, 1995, approximately 11 months in advance of the previously scheduled date of August 7, 1996.

The submittal date for the proposed draft Operable Unit 3 Final Action Record of Decision has been accelerated nine months, from April 2, 1997, to July 25, 1996.

Removal Actions

Plant 1 Pad Continuing Release (Removal Action No. 7): This removal action, completed in February 1995, protects surface soils and regional

groundwater from continuing releases of hazardous materials resulting from waste management activities on the eight-acre Plant 1 storage pad. The removal action was conducted in three phases.

Phase I involved the implementation of run-on and run-off control measures and the installation of underground utilities.

Phase II involved the installation of a covered, 80,000 square foot concrete storage pad adjacent to the existing Plant 1 storage pad.

Remaining drums of low-level radioactive waste in outdoor storage on the Plant 1 Pad have been moved into the two new covered storage structures, which are equipped with containment facilities for spill control, drainage, and stormwater runoff/run-on control.

Phase III involved activities to upgrade the existing Plant 1 storage pad, including the installation of a polyurethane and epoxy coating over the pad surface to minimize contaminant migration to the environment.

Removal of Waste Inventories (Removal Action No. 9) This removal action involves the characterization, overpacking, and disposition of low-level radioactive waste materials. Fernald continues to operate an aggressive waste shipping program which began in 1985.

The Fernald site has approval from the DOE Nevada Field Office to dispose of general waste streams at the Nevada Test Site (NTS). The wastes include: process area scrap wastes (scrap metal and wood); construction and Removal Action waste (demolition debris); uranium production residues; baled trash; processed metal waste; thorium wastes; and materials for the U.S. Army Depleted Uranium Armor and Munitions Program.

More than 33,000 drum equivalents (DEs) of waste has been shipped off site so far in Fiscal Year 1995 (October 1, 1994, through February 28, 1995). This includes 7,173 DEs of process area scrap; 776 DEs of thorium; 5,787 DEs of residues to NTS; 1,094 DEs of contaminated trash; 2,095 DEs of recyclable or reusable residues to Scientific Ecology Group, Inc., in Tennessee; 3,222 DEs of backlog construction waste; and 13,032 DEs of newly-generated construction waste.

Safe Shutdown (Removal Action No. 12): This removal action was initiated to ensure the safe and permanent shutdown of production facilities in the former production area. This includes the removal of uranium and other process/raw materials and waste materials from equipment, lines and ductwork. Mate-

rials removed are packaged for disposition.

Several Safe Shutdown programmatic responsibilities have been reassigned to Waste Programs Management. These include the programmatic responsibility for equipment location verification, relocation of excess production equipment within the DOE complex and the private sector, and the sale of depleted uranium metal derbies. The Safe Shutdown program works closely with Waste Programs Management to support them in this ongoing effort.

Plant 1 Ore Silos (Removal Action No. 13):

This removal action was completed on schedule in December 1994. The removal action involved the dismantling of the Plant 1 Ore Silos and their support structures. Due to deteriorated valves, materials leaked from the silos onto an elevated concrete pad in February 1991. The material, known as cold raffinate, is the waste residue from the processing of uranium ore after uranium is removed. Prior to the initiation of actual dismantling activities, the raffinate material that remained in the silos was removed, containerized and placed in safe storage pending final disposition. All 14 silos and support structures have been dismantled, cut up and packaged in containers for shipment as low-level radioactive waste to NTS.

Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator (Removal Action No. 14): This removal action was completed in December 1994. The scope of the removal action included the isolation or removal and disposition of contaminated soils with elevated levels of uranium in the vicinity of an out-of-service solid waste incinerator at the sewage treatment plant. The project was designed to mitigate the potential for contaminant migration. Activities included characterization, removal, storage and disposal of materials.

The first phase of the removal action (characterization) discovered a larger area of contamination than previous sampling had indicated. The additional excavations were completed in accordance with the U.S. EPA-approved Work Plan Addendum.

An area of off-property soil was excavated and verification soil samples were collected and sent to a laboratory for analyses. The excavated soil was brought on site and stockpiled in accordance with Removal Action No. 17 (Improved Storage of Soil and Debris).

The final report, which included validated analytical data from verification soil sampling, was submitted to U.S. EPA and Ohio EPA on November 18, 1994. Comments were received on the final report from U.S. EPA on January 6, 1995. The revised final

report was submitted to U.S. EPA on February 2, 1995.

Scrap Metal Piles (Removal Action No. 15):

This removal action is addressing the stabilization and disposition of low-level radioactive waste scrap metal that was stockpiled outdoors at Fernald. The project is designed to eliminate the potential threat of material releases to the environment due to wind or rain from 1,300 tons of scrap copper and about 2,210 tons of recoverable ferrous and nonferrous scrap metal.

The recycling of the recoverable ferrous and nonferrous scrap metal has been completed under a contract that emphasized recycling or other beneficial reuse. Disposition of secondary waste from the recycling process is being negotiated with the subcontractor. The ferrous metal has been reprocessed for restricted reuse in DOE high-energy physics programs. A portion of the nonferrous metal has been recycled.

Plans are being finalized for the removal and off-site processing of the containerized scrap copper pile. This portion of the project is currently on hold until funding becomes available.

Non-recoverable scrap metal at Fernald has been packaged into appropriate containers and shipped off site for disposal under Removal Action No. 9 (Removal of Waste Inventories).

Improved Storage of Soil and Debris (Removal Action No. 17): This removal action was initiated to address contaminated soil and debris generated as a result of continued construction and maintenance projects, removal actions, and remedial actions at Fernald. Field implementation activities originally included four separate actions: the construction of three temporary interim storage structures (similar to those currently being used on Fernald's Plant 1 Pad), and the in-place containment of one existing large soil and rubble pile. These four field actions were to be implemented to improve interim storage and management of contaminated soils and debris to mitigate the potential spread of contamination until their final disposition is determined under the Operable Unit 3 and Operable Unit 5 Records of Decision.

Fernald requested and received EPA approval to cancel the planned construction of the three planned temporary covered storage structures and pursue more viable alternatives. These changes are the result of a re-evaluation of evolving waste and debris management methodologies and public concerns regarding the construction of additional storage structures at Fernald -- a Superfund site planned for total

remediation.

The U.S. EPA and Ohio EPA have approved the proposed plan to install an in-place vegetative cover (to serve as the in-place containment) over the existing large soil and rubble pile located north of Third Street within Fernald's former production area. Field activities in support of this regrading and seeding activity are on schedule for completion in the summer of 1995.

Visible scrap metal and wood was first removed from the Third Street soil and rubble pile and packaged for waste shipment.

The concrete from the soil and rubble pile north of Third Street has been segregated to the east side of the pile where it was size reduced to allow for more efficient stockpiling. Grading is essentially complete on the west side of the pile, including compaction of each lift to ensure slope stabilization.

Installation of a concrete curb and gutter, that will serve as the drainage trench around the perimeter base of the pile, began in February 1995.

Plant 7 Dismantling (Removal Action No. 19): This removal action was completed in November 1994. Activities under this removal action included characterization, decontamination, removal, containerization and disposal or reuse of materials in the building, and decontamination and dismantling of the building itself.

Steel, concrete and other materials including approximately 700 tons of structural steel have been packaged for recycling or other beneficial reuse.

Following the successful removal of interior contents, piping and equipment and all interior and exterior transite siding, the structural steel frame of Plant 7 was successfully imploded on September 17, 1994, on the second attempt using linear-shaped explosive charges. The final takedown completed an effort which began September 10, when explosive charges failed to take the building down completely. The first two floors of the building collapsed as planned on the first attempt. However, splice plates that had been pre-cut on the third and fifth floors did not separate as anticipated. The building dropped approximately 30-35 feet instead of the planned 60 feet.

The final takedown involved strategic placement and detonation of additional explosive charges at key structural supporting columns. The specialized steel-cutting charges were detonated sequentially to cut columns and to use the weight and configuration of the building to cause it to fall toward a pre-determined open area.

The dismantling process was completed by

using track-mounted mechanical shears to cut the steel into sizes permitting shipment off site for recycling.

Neutralization of Uranyl Nitrate Inventories (Removal Action No. 20): DOE and FERMCO are evaluating a new date to begin neutralizing the inventory of uranyl nitrate hexahydrate (UNH), an intermediate product in the former uranium recovery process at Fernald.

Systems operability testing performed on the treatment system prior to the planned January 1995 startup date continued to identify minor problems with valves, pipes, and instrumentation which must be addressed before a safe startup of the system can be assured.

DOE and FERMCO believe that the startup will begin in July 1995, but remain committed to start and complete the project quickly and in a manner that fully protects workers and the public.

The purpose of this project is to safely neutralize and dispose of approximately 200,000 gallons of UNH, which essentially is uranium dissolved in nitric acid. The UNH is stored in 18 tanks in and around Plant 2/3. It will be diluted, neutralized, and filtered. There will be two by-products.

The solid filter cake is expected to meet non-hazardous requirements of the Resource Conservation and Recovery Act (RCRA). The solid filter cake will be drummed and shipped to the Nevada Test Site for disposal as non-hazardous low-level radioactive waste.

The liquid filtrate will be tested to confirm its acceptability for discharge to the Great Miami River under Fernald's current National Pollutant Discharge Elimination System (NPDES) permit. Uranium will be removed from the liquid filtrate prior to treatment of the liquid filtrate through the site's normal wastewater treatment systems. Following treatment, the liquid waste will be sampled for uranium and other metals, acid content, etc., to ensure that it meets NPDES regulations for toxic pollutants prior to discharge to the river.

UNH became a RCRA issue due to its low pH (high acid content) when the material was declared waste by DOE in 1991. RCRA is a federal law designed to ensure safe handling, storage, treatment and disposal of hazardous waste.

Asbestos Removals (Removal Action No. 26): This removal action documents the ongoing asbestos abatement activities at Fernald to manage asbestos in-place and mitigate the potential for asbestos fiber release and migration. Abatement activities within the ongoing Asbestos Program

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include repairs, encasement, encapsulation or removal of asbestos containing materials which exist in many buildings on the Fernald site. Abatement to date include small-scale in-situ repairs, encasement, encapsulation, removals, and the completion of the large-scale asbestos abatement. To date, asbestos abatement efforts have been completed in nine buildings. Encapsulation has been completed in two buildings. Field activities in support of asbestos abatement are continuing, including the removal of asbestos-bearing thermal insulation in pipes, tanks, and valves throughout the Fernald site.

Fire Training Facility (Removal Action No 28): This removal action was initiated to address an area historically used to simulate fire and emergency response conditions for training purposes. The Fire Training Facility is located just north of the former production area on the Old North Access Road. Work activities include the removal, decontamination, disposal, treatment or storage of all buildings, structures, tanks, and equipment in the area.

The concrete building was demolished last fall. The pressure vessel was removed and size reduced, the metal being used in the restricted use recycling program.

Waters and sludges were removed from the open top tank and containerized for disposal. The open top tank was removed from the shallow trench which held it.

Contaminated soils were excavated from the skid tank pond following removal, size reduction and containerization of the skid tank. Soils identified as being radiologically contaminated were removed and placed in covered, bermed soil piles.

Excavated areas have all been backfilled and environmental samples have been collected. Remaining activities consist of excavation and containerization of a portion of the asphalt pad and size reduction of the open top tank.

For More Information

More information about Operable Unit 3 is available in the Public Environmental Information Center (PEIC), where Fernald Project cleanup documents are kept in the Administrative Record. The PEIC is located in the JAMTEK building, 10845 Hamilton-Cleves Highway, Harrison, Ohio, 45030. The telephone number is (513) 738-0164.